

WHAT IS CLAIMED IS:

1. A purified polypeptide comprising an amino acid sequence selected from the group consisting of:
 - 5 a) the amino acid sequence of SEQ ID NO:1, 2, 3, 4, 35, or 36;
 - b) a sequence having at least 6 contiguous residues of the amino acid sequence of SEQ ID NO:1 or SEQ ID NO:2;
 - c) a sequence having at least 65% sequence identity to the amino acid sequence of SEQ ID NO:1 or SEQ ID NO:2; and
 - 10 d) a sequence having at least 65% sequence identity to a fragment of SEQ ID NO:1 or SEQ ID NO:2 at least six contiguous residues in length.
2. The polypeptide of claim 1, wherein said amino acid sequence has at least 75% sequence identity to the amino acid sequence of SEQ ID NO:1 or SEQ ID NO:2.
- 15 3. The polypeptide of claim 1, wherein said amino acid sequence has at least 75% sequence identity to a fragment of SEQ ID NO:1 or SEQ ID NO:2 at least 6 contiguous residues in length.
- 20 4. The polypeptide of claim 1, said amino acid sequence having at least 80% identity to the amino acid sequence of SEQ ID NO:1 or SEQ ID NO:2.
5. The polypeptide of claim 1, said amino acid sequence having at least 80% identity to a fragment of SEQ ID NO:1 or SEQ ID NO:2 at least 6 contiguous residues in length.
- 25 6. The polypeptide of claim 1, said amino acid sequence having at least 90% identity to the amino acid sequence of SEQ ID NO:1 or SEQ ID NO:2.
7. The polypeptide of claim 1, said amino acid sequence having at least 90% identity to a fragment of SEQ ID NO:1 or SEQ ID NO:2 at least 6 contiguous residues in length.
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8. The polypeptide of claim 1, said amino acid sequence having at least 95% identity to the amino acid sequence of SEQ ID NO:1 or SEQ ID NO:2.

5 9. The polypeptide of claim 1, said amino acid sequence having at least 95% identity to a fragment of SEQ ID NO:1 or SEQ ID NO:2 at least 6 contiguous residues in length.

10. 10. The polypeptide of claim 1, wherein said polypeptide comprises the amino acid sequence of SEQ ID NO:35 or SEQ ID NO:36.

10 11. An isolated nucleic acid encoding said polypeptide of claim 1.

12. The isolated nucleic acid of claim 11, wherein said polypeptide is encoded by
i) the nucleic acid sequence of SEQ ID NO:5;
ii) the nucleic acid sequence of nucleotides 383 to 489 of SEQ ID NO:5;
15 iii) the nucleic acid sequence of SEQ ID NO:6; or
iv) the nucleic acid sequence of nucleotides 388 to 432 of SEQ ID NO:6.

13. A vector comprising the nucleic acid of claim 12.

20 14. Host cells comprising the vector of claim 13.

15. The host cells of claim 14, wherein said host cells are eukaryotic host cells.

25 16. A pharmaceutical composition comprising the polypeptide of claim 1 and a pharmaceutically acceptable carrier.

17. An antibody having specific binding affinity for the polypeptide of claim 1.

30 18. A chimeric natriuretic polypeptide comprising a first region and a second region, said first region having an amino acid sequence selected from the group consisting of:
a) the sequence of residues 1 to 27 of SEQ ID NO:16;

b) the sequence of residues 1 to 25 of SEQ ID NO:17;

c) the sequence of residues 1 to 23 of SEQ ID NO:18;

d) the sequence of residues 1 to 22 of SEQ ID NO:19; and

e) the sequence of a), b), c), or d) with one to five amino acid substitutions;

5 said second region having an amino acid sequence selected from the group consisting of:

f) the sequence of SEQ ID NO:1 or SEQ ID NO:2;

g) a sequence having at least 6 contiguous residues of the amino acid sequence of SEQ ID NO:1 or SEQ ID NO:2;

10 h) a sequence having at least 65% sequence identity to the amino acid sequence of SEQ ID NO:1 or SEQ ID NO:2; and

i) a sequence having at least 65% sequence identity to a fragment of SEQ ID NO:1 or SEQ ID NO:2 at least six contiguous residues in length.

15 19. A purified polypeptide comprising an amino acid sequence of the formula: Gly-Xaa₁-Xaa₂-Xaa₃-Xaa₄-Xaa₅-Xaa₆-Xaa₇-Xaa₈-Xaa₉-Xaa₁₀-Xaa₁₁-Xaa₁₂-Xaa₁₃-Xaa₁₄-Xaa₁₅-Xaa₁₆-Xaa₁₇-Xaa₁₈-Xaa₁₉-Xaa₂₀-Xaa₂₁-Xaa₂₂-Xaa₂₃-Xaa₂₄-Xaa₂₅-Xaa₂₆-Xaa₂₇-Xaa₂₈-Gly-Xaa₂₉-Xaa₃₀-Xaa₃₁-Xaa₃₂ (SEQ ID NO:20),

wherein Xaa₁ is Glu or Lys; Xaa₂ is Pro, His, or Arg; Xaa₃ is Pro or Leu; Xaa₄ is

20 Pro, Leu, or Ser; Xaa₅ is Cys or Pro; Xaa₆ is Pro, His, Gln, or Arg; Xaa₇ is Arg, Phe, or Leu; Xaa₈ is Asp, Gly, or absent; Xaa₉ is Ser, Pro, or Leu; Xaa₁₀ is Pro or absent; Xaa₁₁ is Ser, Ala, or absent; Xaa₁₂ is Pro or Ala; Xaa₁₃ is Ala, Phe, Ile, or Leu; Xaa₁₄ is Pro, Lys, or Leu; Xaa₁₅ is Val, Leu, or Trp; Xaa₁₆ is Cys, His, or Val; Xaa₁₇ is Asp, Ala, Ile, Thr, Pro, or Arg; Xaa₁₈ is Thr, Pro, or His; Xaa₁₉ is Val, Ile, Pro, Val, Ser, or Leu; Xaa₂₀ is

25 Arg, Ser, Ile, or Glu; Xaa₂₁ is Val, Ile, Ala, or Pro; Xaa₂₂ is Thr, Val, or Leu; Xaa₂₃ is Leu, Ser, or His; Xaa₂₄ is Gly or Ala; Xaa₂₅ is Phe, Ser, Thr, or Leu; Xaa₂₆ is Val, Asp, or Leu; Xaa₂₇ is Val, Leu, or Ser; Xaa₂₈ is Ser, Arg, or Leu; Xaa₂₉ is Asn, Asp, Pro, or Thr; Xaa₃₀ is His, Gln, Asn, or Thr; Xaa₃₁ is Thr, Ile, or Ser; and Xaa₃₂ is Pro, Leu, or Glu.

30 20. A method for diagnosing a heart condition in a patient, said method comprising:

a) providing a biological sample from said patient;

b) detecting the presence, absence, or level of BNP2 or BNP3 in said biological sample; and

c) classifying said patient as having said heart condition or not having said heart condition based, at least in part, on the presence of BNP-2 or BNP-3, the level of BNP2 or BNP3, or the absence of BNP2 or BNP3.

5 21. The method of claim 20, wherein said heart condition is heart failure.

10 22. The method of claim 20, wherein said heart condition is unstable angina.

23. The method of claim 20, wherein said heart condition is acute myocardial infarction.

15 24. The method of claim 20, wherein said heart condition is hypertension.

25. The method of claim 20, wherein the presence, absence, or level of BNP2 is detected.

20 26. The method of claim 20, wherein the presence, absence, or level of BNP3 is detected.

27. A method for diagnosing a heart condition in a patient, said method comprising:

a) providing a biological sample from said patient;

b) detecting the presence, absence, or level of a ribonucleic acid encoding BNP2

25 or BNP3 in said biological sample; and

c) classifying said patient as having said heart condition or not having said heart condition based, at least in part, on the presence of said ribonucleic acid encoding BNP2 or BNP3, the level of said ribonucleic acid encoding BNP2 or BNP3, or the absence of said ribonucleic acid encoding BNP2 or BNP3.

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28. The method of claim 27, wherein said heart condition is heart failure.

29. The method of claim 27, wherein said heart condition is unstable angina.
30. The method of claim 27, wherein said heart condition is acute myocardial infarction.
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31. The method of claim 27, wherein said heart condition is hypertension.
32. A method for treating a heart condition in a mammal, said method comprising
10 administering a polypeptide or a nucleic acid to said mammal under conditions wherein the severity of a symptom of said heart condition is reduced, wherein said polypeptide is a polypeptide of claim 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, and wherein said nucleic acid is a nucleic acid of claim 11 or 12.
- 15 33. The method of claim 32, wherein said method comprises administering said polypeptide.
34. The method of claim 32, wherein said method comprises administering said nucleic acid.
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35. The method of claim 32, wherein said heart condition is heart failure.
36. The method of claim 32, wherein said heart condition is unstable angina.
- 25 37. The method of claim 32, wherein said heart condition is acute myocardial infarction.
38. The method of claim 32, wherein said heart condition is hypertension.
- 30 39. A purified antibody, wherein said antibody binds to a BNP2 polypeptide, and wherein said antibody does not bind to a BNP polypeptide consisting of the sequence set

forth in SEQ ID NO:16 or to a BNP3 polypeptide consisting of the sequence set forth in SEQ ID NO:4.

40. The antibody of claim 39, wherein said BNP2 polypeptide comprises the sequence
5 set forth in SEQ ID NO:1.

41. The antibody of claim 39, wherein said antibody is a monoclonal antibody.

42. A purified antibody, wherein said antibody binds to a BNP3 polypeptide, and
10 wherein said antibody does not bind to a BNP polypeptide consisting of the sequence set
forth in SEQ ID NO:16 or to a BNP2 polypeptide consisting of the sequence set forth in
SEQ ID NO:3.

43. The antibody of claim 42, wherein said BNP3 polypeptide comprises the sequence
15 set forth in SEQ ID NO:2.

44. The antibody of claim 42, wherein said antibody is a monoclonal antibody.